

ASSIGNMENT 3

Textbook Assignment: "Surface Observation Equipment" (continued), chapter 2, pages 2-9 through 2-39.
"Surface Observation Codes", chapter page 3-1 through 3-18.

- 3-1. Liquid-in-glass thermometers for meteorological applications should be read to what increment?
1. Whole degree
 2. Half degree
 3. Quarter degree
 4. Tenth degree
- 3-2. You are using a wet-bulb thermometer in below freezing temperatures. After wetting the wet-bulb wick, how many minutes must you wait before reading the value?
1. 1
 2. 5
 3. 10
 4. 15
- 3-3. What is the range of temperatures, from lowest to highest, that can be measured by an alcohol thermometer?
1. -115°C to +78.5°C
 2. -115°F to +78.5°F
 3. -20°C to +120.0°C
 4. -20°F to +120.0°F
- 3-4. Of the following statements, which one correctly identifies why you should avoid using mercury thermometers?
1. Mercury thermometers are expensive
 2. Alcohol thermometers are better suited for meteorological and oceanographic measurements
 3. Mercury is prone to separation
 4. Mercury is a hazardous material
- 3-5. When the temperature is above 85°F, how many minutes must an electric psychrometer be allowed to acclimatize prior to use?
1. 1 to 2 minutes
 2. 5 to 10 minutes
 3. 10 to 15 minutes
 4. 15 to 20 minutes
- 3-6. You are using an electric psychrometer at night in an unlighted area. When, if ever, should you turn on the scale lights?
1. When turning on the fan motor
 2. Only when actually reading the temperatures
 3. Whenever light is needed in the observation area
 4. Never; scale lights are provided for calibration only
- 3-7. What is the pressure element in an ML-448/UM precision aneroid barometer?
1. A Sylphon cell
 2. A series of gears
 3. An electronic circuit
 4. A bellows
- 3-8. A precision aneroid barometer should be read to the nearest
1. 0.5 in.
 2. 0.05 in.
 3. 0.005 in.
 4. 0.0005 in.

- 3-9. The primary use of the marine barograph is to determine
1. 3-hour pressure tendencies
 2. sea-level pressure
 3. altimeter setting
 4. station pressure
- 3-10. How often should recording charts be replaced on the barograph?
1. Once a quarter
 2. Once a week
 3. Every 4 days
 4. Every day
- 3-11. What type of purple ink should you use to reink a barograph pen?
1. Fountain-pen ink
 2. Recording ink
 3. Stamp-pad ink
 4. Ball-point-pen ink
- 3-12. What is the maximum number of indicators that may be connected to each AN/UMQ-5 wind measuring system?
1. One
 2. Two
 3. Five
 4. Six
- 3-13. Which of the following indicators/recorders is used primarily by air traffic control personnel?
1. ID-2447/U
 2. RD-108/UMQ-5
 3. ID-300/UMQ-5
 4. ID-586/UMQ-5
- 3-14. While operating at the standard speed, the RD-108/UMQ-5 recorder can run for approximately how many days before the chart must be changed?
1. 30
 2. 15
 3. 10
 4. 7
- 3-15. What kind of wind is measured by the Type B-3 wind indicator?
1. True
 2. Total
 3. Relative
 4. Magnetic
- 3-16. If the apparent winds are read on the wind indicator as 120° at 27 knots, and the ship is moving toward True North, which of the following computed true winds is most likely correct?
1. 140° at 33 knots
 2. 090° at 23 knots
 3. 230° at 40 knots
 4. 330° at 25 knots
- 3-17. What is the purpose for depressing the trigger on the AN/PMQ-3 hand-held anemometer?
1. To check calibration
 2. To release the wind vane
 3. To switch to the high scale
 4. To switch to the low scale
- 3-18. How often should the wind-speed transmitter unit of the AN/PMQ-3 be oiled?
1. After each use
 2. Once per month
 3. Twice per quarter
 4. Twice per year

3-19. The ML-217 plastic rain gauge is used only to measure liquid precipitation.

1. True
2. False

3-20. Runway visual range may be changed by turning up the intensity of the runway lighting.

1. True
2. False

- | |
|--------------------|
| A . R-437/GMQ-10 |
| B . ML-461/GMQ-10 |
| C . OA-7900/GMQ-10 |
| D . ID-820/GMQ-10 |

Figure 3-A

IN ANSWERING QUESTIONS 3-21 THROUGH 3-23, REFER TO FIGURE 3-A. SELECT THE GMQ-10 COMPONENT THAT MATCHES THE DESCRIPTION GIVEN. NOT ALL RESPONSES ARE USED.

3-21. Provides a LED digital display of runway visual range in hundreds of feet.

1. A
2. B
3. C
4. D

3-22. The transmissometer indicator/recorder unit.

1. A
2. B
3. C
4. D

3-23. The transmissometer projector.

1. A
2. B
3. C
4. D

- | |
|------------------|
| A. DAILY |
| B. WEEKLY |
| C. EVERY 2 WEEKS |
| D. MONTHLY |

Figure 3-B

IN ANSWERING QUESTIONS 3-24 THROUGH 3-26, REFER TO FIGURE 3-B. NOT ALL RESPONSES ARE USED.

3-24. If the ID-353B/GMQ-10 recorder is operated continuously with the AN/GMQ-32 system, how often must the recorder chart be replaced?

1. A
2. B
3. C
4. D

3-25. How often must the ID-820/GMQ-10 recorder chart drive spring be rewound?

1. A
2. B
3. C
4. D

3-26. How often must the ID-820/GMQ-10 zero adjustment be readjusted?

1. A
2. B
3. C
4. D

3-27. Which of the three mode settings on the OA-7900A/GMQ-10 indicator provides runway visual range?

1. NORMAL only
2. NORMAL or DAY
3. NORMAL or NIGHT
4. DAY or NIGHT

3-28. When using the RO-546 recorder, you must apply the equipment correction factor to what reading(s)?

1. Recorded elevation angles for solid cloud bases under 45° elevation
2. Recorded elevation angles for solid cloud bases over 45° elevation
3. Recorded elevation angles for fog and stratus under 25° elevation
4. All recorded elevation angles regardless of cloud type or cloud height

3-29. In which of the following situations should a new correction factor be determined for the RO-546 recorder?

1. After replacing a projector bulb
2. After refocusing the projector lights
3. After cleaning the detector lens
4. After each of the above

3-30. What maintenance responsibilities, if any, do Aerographers have for the RO-546 recorder?

1. Replacing fuses and adjusting the power supply
2. Changing the chart paper and chart-marking stylus
3. Sending the unit out for calibration
4. None

3-31. What is the maximum range of the ML- 12 1 ceiling light projector?

1. 5,000 ft
2. 10,000 ft
3. 12,500 ft
4. 15,000 ft

3-32. What value does a clinometer actually measure?

1. Cloud elevation angle
2. Baseline distance
3. Cloud height
4. Height above waterline

3-33. Ceiling balloons provide reasonable measurements of cloud heights up to what maximum height?

1. 2,000 ft
2. 7,500 ft
3. 12,000 ft
4. 25,000 ft

3-34. After a 30-gram balloon is inflated, how much free lift, in grams, should the balloon have?

1. 75
2. 89
3. 126
4. 139

A. CP-718/UM DENSITY ALTITUDE COMPUTER
B. CP-165/UM PSYCHROMETRIC COMPUTER
C. CP-264/U TRUE WIND COMPUTER
D. CP-402/UM PRESSURE REDUCTION COMPUTER

Figure 3-C

IN ANSWERING QUESTIONS 3-35 THROUGH 3-38, REFER TO FIGURE 3-C. MATCH EACH HAND-HELD COMPUTER TO THE DESCRIPTION GIVEN. RESPONSES ARE USED ONLY ONCE.

3-35. Used to compute dew-point temperature or relative humidity.

1. A
2. B
3. C
4. D

3-36. Used to compute up to six different values including specific humidity.

1. A
2. B
3. C
4. D

- 3-37. Used to compute pressure altitude and altimeter setting.
1. A
 2. B
 3. C
 4. D
- 3-38. Used to calculate a desired course and speed of a ship to recover or launch aircraft, but has other applications as well.
1. A
 2. B
 3. C
 4. D
- 3-39. What should you do when you first become aware of an equipment outage?
1. Ignore it
 2. Notify your supervisor
 3. Call maintenance personnel
 4. Unplug the power
- 3-40. While at sea, an equipment failure occurs that is beyond the capability of onboard technicians to repair. What maintenance resource should be used during the next in-port period?
1. 3-M
 2. FTRs
 3. METEM personnel
 4. Naval supply system
- 3-41. Which of the following maintenance sources provides support for all shipboard equipment?
1. 3-M
 2. FTRs
 3. METEM personnel
 4. Contractors
- 3-42. Asia is located in what WMO region?
1. I
 2. II
 3. III
 4. IV
- 3-43. What type of code form is used only within a specific country?
1. National
 2. Regional
 3. International
 4. Special
- 3-44. Which of the following forms is used to record shipboard weather observations?
1. FMH Form-10
 2. CNMOC Form 3144.1
 3. CNMOC Form 3140/12
 4. CNMOC Form 3141/3
- 3-45. If you discover an error in an observation after it has just been transmitted, what, if anything, should you do?
1. Erase the incorrect data on the observation record and enter the correct data
 2. Line out the incorrect data on the observation record and enter the correct data in red only
 3. Line out the incorrect data, enter the correct data in red, transmit a correction, and enter the transmission time of the correction
 4. Nothing
- 3-46. At the end of each month, observation forms must be forwarded to which of the following commands?
1. FNMOC, Monterey, CA
 2. NLMOD, Pensacola, FL
 3. FNMOC, Asheville, NC
 4. CNMOC, Bay St. Louis, MS

3-47. If dangerous weather such as a tornado is seen, what type of observation should be transmitted?

1. METAR
2. SNYPOTIC
3. SPECI
4. RECORD SPECIAL

3-48. Which of the following observations should contain 3-hourly additive data?

1. 1300Z
2. 1500Z
3. 1800Z
4. 1750Z

(actual observation)

METAR MXXX 221100Z 21017G34KT 2SM
TSRA
BKNO15CB OVC040 18/17 A2991 RMK FRQ
LTGCC W
TS W MOV NE SLP133;

(symbolic format for this case)

METAR CCC YYGGggZ dddffGf_mf_mKT
VVVVVSM w'w'

N_sN_sN_sh_sh_sh_s N_sN_sN_sh_sh_sh_s T'T'/T'_dT'_d AP_HP_HP_HP_H
(supplemental);

(actual observation)

METAR MYYY 221056Z 07005KT 1/2SM
R03L/2400FT
FG VV005 15/15 A2992 RMK SLP132;

(symbolic format for this case)

METAR CCCC YYGGggZ dddffKT VVVVVSM
RD_RD_R/V_RV_RV_RV_Rft w'w' VVh_sh_sh_s T'T'/T'_dT'_d

AP_HP_HP_HP_H

(supplemental);

Figure 3-D

IN ANSWERING QUESTIONS 3-49 THROUGH 3-54, REFER TO THE METAR CODED REPORTS FOR STATIONS MXXX AND MYYY IN FIGURE 3-D.

3-49. What is the wind direction at station MXXX?

1. 340°
2. 210°
3. 170°
4. 080°

3-50. What is the horizontal surface visibility reported at station MYYY?

1. 1/2 statute mile
2. 1/2 statute meter
3. 15 nautical miles
4. 2,400 feet

3-51. What is the runway visual range reported by station MYYY?

1. 300 feet
2. 2,400 meters
3. 2,400 feet
4. 0300 variable 2,400 feet

3-52. What weather is occurring at stations (a) MXXX and (b) MYYY?

1. (a) Thunderstorm with rain
(b) smoke
2. (a) Thunderstorm with rain
(b) fog
3. (a) Thunderstorm with hail
(b) fog
4. (a) Thunderstorm with hail
(b) smoke

3-53. What is the sea level pressure at MXXX?

1. 29.91 in.
2. 29.91 hPa
3. 1013.3 in.
4. 1013.3 hPa

- 3-54. How much sky cover is present over station MYYY?
1. 0/8
 2. 1/8
 3. 8/8
 4. Unable to determine; no significant clouds cover was reported
- 3-55. In METAR observations, temperatures are reported to the nearest
1. tenth degree Fahrenheit
 2. tenth degree Celsius
 3. whole degree Fahrenheit
 4. whole degree Celsius
- 3-56. When you are reporting altimeter settings, what is the meaning of "A," as in A2992?
1. The altimeter setting is an approximation
 2. The altimeter setting is the maximum for the day
 3. The altimeter setting is in inches
 4. The altimeter setting is in hectopascals
- 3-57. Unlike shore stations, the METAR code aboard ship is used only to record data, not to encode data for transmission.
1. True
 2. False
- 3-58. International code FM 12-XI SYNOP is used to report which of the following observations?
1. Land synoptic
 2. Ship synoptic
 3. Land aviation
 4. Ship aviation

(actual observation)

AAXX 18004 72409 21660 72214 10147 20131 39986 49991 54000 70500 84121 91749 333 10147 20086
60001 70005;

(symbolic format for this case)

AAXX YYGGi_w I_RI_XhVV Nddff 1S_nTTT 2S_nT_dT_dT_d 3P_OP_OP_OP_O 4PPPP 5appp 7wwW₁W₂ 8N_hC_LC_MC_H 9ggGG 333
1S_nT_XT_XT_X 2S_nT_TT_TT_T 6RRRt_R 7R₂₄ R₂₄ R₂₄ R₂₄:

Figure 3-E

IN ANSWERING QUESTIONS 3-59 THROUGH 3-62, REFER TO FIGURE 3-E AT THE TOP OF THIS PAGE. REFER TO THE REGION IV LAND-STATION SYNOPTIC REPORT.

3-59. What is the station's block/station number?

1. 72409
2. 21660
3. 72213
4. 70005

3-60. What is the wind direction?

1. 072°
2. 130°
3. 210°
4. 220°

3-61. What is the dew-point temperature?

1. 14.7°F
2. 14.7°C
3. 13.1°F
4. 13.1°C

3-62. In WMO Region IV at 0000Z, what maximum and minimum temperatures are reported following the 333 indicator?

1. Previous 12-hour minimum and previous 18-hour maximum
2. Previous 24-hour maximum and previous 12-hour minimum
3. Previous 12-hour maximum and previous 18-hour minimum
4. Previous 24-hour maximum and minimum

3-63. If a station within the United States reports code groups after a "555" indicator, which of the following publications would provide the information necessary to decode these groups?

1. WMO Pub 306, Vol 1, International Codes
2. NAVMETOCCOMINST 3141.2
3. FMH-1 (Federal Meteorological Handbook Number 1)
4. FHM-2 (Federal Meteorological Handbook Number 2)

3-64. What publication is used to convert the IRCS to the ship's name and country of registration?

1. FMH-2
2. FMH-1
3. ACP-100
4. WMO Pub 306, Vol 1

The maritime data section of an actual ship synoptic report reads:

22212; 00123 20504 30207 40806 51004

The symbolic format of this section is:

222D_SV_X 0S_ST_WT_WT_W 2P_WP_WH_WH_W 3d_{W1}d_{W1}d_{W2}d_{W2}
4P_{W1}P_{W1}H_{W1}H_{W1} 5P_{W2}P_{W2}H_{W2}H_{W2}:

Figure 3-F

IN ANSWERING QUESTIONS 3-65 THROUGH 3-69, REFER TO FIGURE 3-F.

3-65. Which group reports sea-surface temperature?

1. 22212
2. 00123
3. 20504
4. 30207

3-66. What is the sea-wave height and sea-wave period?

1. 4 ft, 5 sec
2. 5 ft, 4 sec
3. 7 ft, 5 sec
4. 8 ft, 4 sec

3-67. What is the primary swell-wave direction?

1. 020°
2. 030°
3. 070°
4. 080°

3-68. What is the secondary swell-wave period?

1. 4 sec
2. 6 sec
3. 8 sec
4. 10 sec

3-69. What is the primary swell-wave height?

1. 4 ft
2. 7 ft
3. 10 ft
4. 16 ft

3-70. What code form do meteorological buoys moored near coastal harbors use to report position?

1. Land Synoptic (SYNOP)
2. Ship Synoptic (SHIP)
3. SPECI
4. METAR